

Notice of Allowability

Application No.

10/044,638

Examiner

Alexander Jamal

Applicant(s)

MAGEE ET AL.

Art Unit

2614

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to appeal brief filed 10-26-2007.
2. ☒ The allowed claim(s) is/are 54-56,58-62,64,65,67-74.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.


Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____


CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER

DETAILED ACTION

Response to Applicant's Amendment

1. Based upon the submitted appeal brief filed 10-26-2007 and the examiner's amendment below, the examiner withdraws all rejections to all claims.
2. The examiner notes applicant's arguments in the appeal brief that the indexing function recited in the claims is not the same generic identifying function that would have been obvious to the implement in the cited prior art (page 21 of the appeal brief). The examiner agrees with applicant and notes that the 'indexing function' referred to in the claims is a specific function defined by applicant's specification. The 'indexing' of the training tones includes a value being assigned to each training tone (the training tones situated as per applicant's Figures 2 and 3) and the index value is the value 'k' that is used specifically in equations 1-3 (applicant's spec. pages 14-15).

Examiner's Amendment

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Gary Pitzer (reg. number 39,334) on 12-7-2007.

The application has been amended as follows:

Dependant **claim 57** has been moved into independent **claim 54**.

Claim 57 has been cancelled.

Dependant **claim 63** has been moved into independent **claim 60**.

Claim 63 has been cancelled.

Dependant **claim 66** has been moved into independent **claim 65**.

Claim 66 has been cancelled.

In **Claim 68**, in the first line of the claim, "according to claim 66" has been changed to "according to claim 65".

Claim 73 has been amended to:

73. A wireless communications system, comprising:

at least one antenna operative to receive a wireless signal over a communication channel and convert the received signal into a corresponding electrical signal;

a preprocessing system operative to process the electronic signal and convert the corresponding electrical into a digital signal and perform desired preprocessing of the digital signal to provide a preprocessed digital signal in the frequency domain having a plurality of tones, some of the plurality of tones being of a first type and others of the plurality of tones being of a second type, the tones of the first type having a fewer number of tones than the tones of the second type;

a channel estimator operative to characterize the communication channel and provide a channel estimate thereof;

a noise estimator operative to estimate noise for tones of the preprocessed digital signal of the first type and to provide an indication of estimated noise for the tones of the first type; and

a beamformer operative to perform beamforming computations for tones of the first preprocessed digital signal of the second type, the beamforming computations employing the channel estimate and the indication of estimated noise for a tone of the first type nearest each respective tone of the second type – ; and

an indexing function that selects an indexed second type of tone from the plurality of the second type of tones for which a current beamforming computation is to be performed; and

a noise selection function operative to select one of the plurality of the first type of tones nearest to the indexed second type of tone, the respective beamforming computation for the indexed second type of tone employing the computed noise estimation for the selected one of the plurality of the first type of tones.

Allowable Subject Matter

4. **Claims 54-56,58-62,64,65,67-74** are allowed over the prior art of record
5. The following is an examiner's statement of reasons for allowance:

In the examiner's opinion, it would not have been obvious to a person of ordinary skill in the art first to provide the specific indexing function as described above in the noise estimation beamforming system disclosed by Youssefmir et al. (6795409).

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander Jamal whose telephone number is 571-272-7498. The examiner can normally be reached on M-F 9AM-6PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Curtis A Kuntz can be reached on 571-272-7499. The fax phone numbers for the organization where this application or proceeding is assigned are **571-273-8300** for regular communications and **571-273-8300** for After Final communications.

Examiner Alexander Jamal

December 10, 2007


CURTIS KUNTZ
SUPERVISORY PATENT EXAMINER
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